Variable Dimensions Supplement for Flume Basins

The goal of this supplement is to explain the use of the "Variable Dimensions" of the U-shaped c1 and c2 bars within the "Reinforced Concrete Flume Basin", standards (RCFB-01-04, RCFB-02-04, and RCFB-03-04). In order to bend the c1 and c2 bars, the formulas listed directly in the "Bent Bar Details" should be used. The variable dimensions (1) and (2) should be used to check the accuracy of the reinforcement bends. However variable dimension (3) will also be a primary source of information.

Both the formulas within the "Bent Bar Details" and the "Variable Dimensions" contain variables such as K, N, O, S, T, U, and V. These variables can be found in the "Table of Flume Basin Dimensions" for the applicable S x H (Span by Height) sized culvert. The "Variable Dimensions" also contain the components No. of c1 and No. of c2. This refers to the number of c1 or c2 bars to be used in the flume. This amount along with the length and weight of the bars are listed in the "Estimate Quantities – Flume Basin" for each applicable culvert size.

Creating the c1 Bars
The c1 bar has a constant length for each culvert size, but the bends occur at different locations. Therefore, the bar with the longest exterior legs has the shortest central length and the bar with the shortest exterior legs has the longest central length.

1. Use the formula (O+T-4") to find the distance to the bends from each end of the bar with the shortest exterior leg.
2. Use Variable (3) to find the distance to the bends from each end of the bar with the longest exterior leg.
3. Use Variable (1) and the formula (K+2U-4") to check the accuracy of the distance between the bends in the two extreme bars.
4. The rest of the c1 bars should vary linearly in both the exterior leg length and central length.

Creating the c2 Bars
The c2 bar is listed with a minimum and maximum length. All the other c2 bars will vary linearly in length between the minimum and maximum.

1. Each of the c2 bars should have a bend at a distance of (T + 1'-10) from the end of the bar.
2. Use the formula (S+2U-4") and Variable (2) to check the accuracy of the distance between the bends in the two extreme bars.

To achieve a linear variation in any of the bars, the bars may be laid out and marked with a chalk line. The distance to the bends can also be calculated for each individual bar. This process is left up to the reinforcement manufacturer.